

Fact Sheet

SylWin1 HVDC Platform

Status: April 2015

Siemens handed over the SylWin1 offshore platform to the customer TenneT in April 2015. Thus the link has taken up commercial operation. SylWin1 is one of five North Sea grid connections for which Siemens was contracted by the German-Dutch network operator TenneT. These links have a total transmission capacity of more than 3.8 gigawatts. High-voltage direct-current (HVDC) transmission technology is used to ensure efficient transfer of the electrical energy to land: The alternating current that is produced is converted to direct current power at the HVDC platform. This is necessary to transport energy over great distances with only low losses. The electricity produced in the wind farms is transported to the German mainland by a subsea cable. Thanks to HVDC technology, transmission losses are less than four percent. The direct current power is then converted back into alternating current at a second converter station on land and fed in to the German power grid.

Technical specifications:

- Capacity: 864 megawatts – enough to supply around 1.1 million households
- Voltage: Input: 155 kilovolts (AC/alternating current)
HVDC link: +/- 320 kilovolts (DC/direct current)
output: 400 kilovolts (AC/alternating current) on land



- HVDC transformers: 2 offshore, each with a rating of 637 MVA, 2 onshore, each at 630 MVA
- Dimensions: Topside: 83 meters x 56 meters x 26 meters (length x width x height)
(without mountings) Baseframe (+ cable access tower): 79 (+7) m x 51 m x 33 (+ 19) m (l x w x h)
- Construction: 7 decks incl. upper deck – total height of 26 m net / 67 m (incl. cranes)
- Crew quarters: 16 cabins with an individual bathroom and a total of 24 bunks
2 galleys with a total of 4 walk-in refrigerated compartments,
1 multi-purpose/recreation room, 2 lounges
- Heliport: 1 elevated helipad
- Local sea depth: 29 meters
- Bottom of platform: 23 meters above sea level
- Loading cranes: 2 on upper deck, each with 10 t load carrying capacity at 40 m extension range
- Total weight: 25,000 tons
(15,000 t platform / 10,000 t baseframe incl. steel piling supports)
- DC submarine cable: 2 cables with steel wire reinforcement (Prysmian)
each 205 km long (160 km in sea, 45 km on land)
 - . Sea approx. 13 cm cable diameter, weight of around 45 kg/m
conductor cross-section of 1,250 mm² (approx. 4 cm copper core diameter)
 - . Wadden Sea approx. 13 cm cable diameter, weight of around 45 kg/m
conductor cross-section of 1,700 mm² (approx. 4.7 cm copper core diameter)
 - . Land approx. 12 cm cable diameter, weight of around 16 kg/m
conductor cross-section of 2,400 mm² (approx. 5.6 cm aluminium core diam.)
- Foundation: 9 pilings (up to 106 m long, embedded up to 70 m in the seabed,
2.5 m in diameter each, wall thickness of 8 cm)
- Unit/Emergency Power Supply: 2 auxiliary power diesel generators, each with an electr. capacity of 3.5 MVA
1 emergency diesel generator at 1,000 kVA
2 uninterrupt power supply (UPS) units, each at 40 kVA
2 UPS units, each at 250 kVA
- Cooling: Seawater cooling with a heat exchanger to the fresh-water cooling system
1,750 cubic meters/h flow rate (equivalent to 145 bathtubs per minute)
- Land-based station: Büttel
- Shipyard: Nordic Yards
- Order received: 2011
- Platform installation: 2014
- Commissioning: 2015